

**Choice Of Trees Species for Various  
Agro-Climatic Zones for The  
Production of Fodder & Fuelwood****The Scientific Agriculture (July 2022)  
Volume 01, Issue 01, Page No. 05-08****"Choice Of Trees Species for Various  
Agro- Climatic Zones for The Production  
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**Introduction**

Trees and forests were always considered as an integral part of the Indian culture. The ancient scriptures and historical records amply support this. The best of Indian culture was born in the forests. The Aryan civilization was started in our forests and our Rishis who evolved the Hindu religion, lived in forests in complete harmony with nature. The ashrams were the centers which harmonized agriculture and pasture with trees, animals and birds. It was widely believed that destruction of forests and cutting of trees created famine conditions,

whereas planting and maintaining trees were regarded as noble acts.

In fact, so much has been written in our ancient literature that individuals on their own agricultural fields were doing planting tree in ancient times.

Gradually, during recent periods because of increasing population and huge gap between demand and supply, forests were ruthlessly exploited to meet the increasing demand of fuel, fodder and timber. To overcome this huge burden upon our existing forests, some alternative steps have

to be taken to meet the increasing demand of forest produce i.e., production of such items have to be carried outside the forest areas as well. Hence, in the light of ever-increasing demand, concept of multiple use of land with multipurpose tree species has become immensely important. In this context, agroforestry, which is a form of multiple land/use system, should be adopted and encouraged. The reasons for higher production under agro forestry system include:

#### What is Agro climatic zone

An “**Agro-climatic zone**” is a land unit in terms of major climates, suitable for a certain range of crops and cultivars. The planning aims at scientific management of regional resources to meet the food, fiber, fodder and fuel wood without adversely affecting the status of natural resources and environment. Crop yield is (FAO, 1983). Agro-climatic conditions mainly refer to soil types, rainfall, temperature and water availability which influence the type of vegetations. An agro-ecological zone is the land unit carved out of agro-climatic zone superimposed on landform which acts as modifier to climate and length of growing period.

Planning of Agro climatic zones of India with the **329 million hectares** of the

geographical area the country presents a large number of complex agro-climatic situations. Several attempts have been made to delineate major agro-ecological regions in respect to soils, climate, physiographic and natural vegetation for macro-level planning on a more scientific basis. They are as follows.

- Agro-climatic regions by the erstwhile Planning Commission.
- Agro-climatic zones under National Agricultural Research Project (NARP).
- Agro-ecological regions by the National Bureau of Soil Survey & Land Use Planning (NBSS & LUP).

#### Agro-climatic Zone

- a) Western Himalayan
- b) Eastern Himalayan
- c) Lower Gangetic plains
- d) Middle Gangetic plains
- e) Upper Gangetic Plains
- f) Trans Gangetic plains
- g) Eastern Plateau & Hills
- h) Central Plateau & Hills
- i) Western Plateau & Hills
- j) Southern Plateau & Hills
- k) East Coast Plains & Hills
- l) West Coast Plains & Hills
- m) Gujarat Plains & Hills
- n) Western Dry Region

o) Islands

c) Band planting of *Thespesia populnea* and *Lannea coromandalica*

**Major Agroforestry Practices**

a) Monoculture of *Casuarina equisetifolia*

d) Monoculture of *Acacia auriculiformis*

b) Intercropping of groundnut, sesame and pulses with *C. equisetifolia*

e) Intercropping groundnut, pulses and minor millets with *Anacardium occidentale*

**Region Specific Factors for deceleration in Productivity**

Agro-Climatic Region	States / Parts of States	Region Specific Constraints
Western Himalayan Region-I	J & K, H.P., Uttarakhand	Severe soil erosion, degradation due to heavy rainfall/floods and deforestation, low SRRs, poor road, poor input delivery and inadequate communication infrastructure and marketing
Eastern Himalayan Region-II	Assam, N.E. States, Sikkim	Al. toxicity and soil acidity, Soil erosion and floods, shifting cultivation, low SRRs, non availability of electricity, poor road, poor input delivery system and communication infrastructure.
Lower and Middle Gangetic Plains Regions-III & IV	West Bengal, Bihar, Eastern UP	Flood/ water logging, improper drainage, Salinity/alkalinity, Arsenic contamination, low SRRs, non availability of electricity, high population growth, poor road and communication infrastructure.
Upper and Transgenesis Plains Region-V & VI	Western U.P., Punjab, Haryana	Groundwater depletion, decreasing total factor productivity, micronutrient deficiency, non-availability of electricity and high population density.
Eastern Plateau & Hills Region-VI	Orissa, Jharkhand, Chattisgarh	Moisture stress, drought and Soil acidity, Iron toxicity, low SRRs, non availability of electricity, high population growth, poor road, poor Input delivery and communication infrastructure.
Central, Western and Southern Plateau and Hills	Bundelkhand (in U.P & MP), parts of Rajasthan,	Drought, moisture stress, Soil crusting & cracking, soil salinity / alkalinity, low SRRs

Regions-VIII, IX &amp; X.

Maharastra, AP, Karnataka &amp; Tamil Nadu

### Fodder

Fodder (browse) is an agricultural term for animal feed, and fodder trees and shrubs are those plants (shoots or sprouts, especially tender twigs and stems of woody plants with their leaves, flowers, fruits or pods) that are raised, used and managed to feed livestock. Fodder plants are plants which are grown in order to provide the nutritional needs of animals. Babayemi and Bamikole, (2006) opined that fodder and shrubs are important components of ruminant diet and they have been found to play an important role in the nutrition of grazing animals in areas where few or no alternatives are available (Van *et al.*, 2005).

### Fuelwood

Fuelwood is the major tangible benefit to the farmers through agroforestry systems. Their ranking in terms of quantitative values is equally important to evaluate/assess the potential trees for fuelwood needs of the farmers. Fuelwood is the largest energy source for the three-quarters of the world's

population who live in developing countries (Scurlock and Hall, 1990).

### SOIL FERTILITY BUILDS UP THROUGH FODDER CROPS:

1. Sunhemp, lucerne, cowpea and clitoria incorporation increased the soil fertility.
2. 25% of N can be reduced through using of leguminous fodder crops as green manure.
3. N balances of 92 kg/ha for 1:1 and 48kg/ha for 2:1 when fodder legumes intercropped with cereal fodders.
4. Fodder crops used as cover cropping such as *Melilotus indica* promising at Sirsa (Haryana).
5. In-situ GM of green gram (Praharaj *et al.* 2004) and cowpea substitute 25 % of N.
6. Chilli-Desi cotton and *Stylosanthes hamata* used as cover crop at 1:2 with a cutting interval of 45 days and saved the 25-50% of NPK. Organic N addition to the extent of 144 kg/ha and increased soil organic carbon content from 0.58 to 0.73%.
7. Lucerne cutting frequency at 30 days reduced the weed intensity and reduced fertilizer demand by 25-50%.
8. Lucerne green manuring with 50% N recorded higher yield (Somasundaram and Nandhini, 2016).